pied, in conjunction with the late J. W. Rodger, on an elaborate investigation of the magnetic rotation of the plane of polarisation in liquids (Phil. Trans., 1895, pp. 621–54), which has not yet been surpassed. A research of a similar character by an original method, on the determination of the earth's magnetic field (Phil. Trans., 1902, pp. 431–62), threw great light on some of the sources of error in absolute magnetic measurements.

While engaged in these researches, and taking his full share of the teaching work, Watson yet found time to write his well-known "Text-book of Physics," which has become deservedly popular, and has made his name familiar to an ever-increasing circle of students. As a teacher his clearness of exposition and his skill in devising experimental illustrations made his lectures very attractive to the serious student.

A large part was taken by Watson in the design and equipment of the new laboratory (now part of the Imperial College) to which the physics department of the Royal College was transferred in 1905. He next became interested in the application of physical methods to the scientific study of the petrol motor, and devised many ingenious instruments of research, including a new type of optical indicator, which has proved invaluable for accurate work on high-speed engines. The laboratory which he designed and equipped for these experiments has since been taken over and extended by the Air Ministry, and proved very useful during the war for the solution of urgent problems in connection with aero-engines. Many of his results were of fundamental importance, and will be found in most standard treatises on the subject.

Watson assisted Sir W. de W. Abney for many years in his researches on colour vision, and made useful contributions of his own to the theory and methods of measurement, a characteristic example of which will be found in his paper on luminosity curves (Proc. R.S., 88 A, p. 404, 1913). In a later paper Sir W. Abney indicates that they were busily engaged on work of great promise in this direction when Watson was "commandeered as scientific adviser at the front." The work which he accomplished in this capacity was doubtless of the greatest national importance, but, in the interests of pure science, one cannot help regretting that so active and many-sided an investigator should have been cut off in his prime by the relentless exigencies of war.

NOTES.

AFTER two years' interval, owing to war conditions, the British Association for the Advancement of Science will resume its series of annual meetings this year at Bournemouth from September 9 to 13, under the presidency of the Hon. Sir Charles Parsons.

SIR GEORGE NEWMAN, K.C.B., Chief Medical Officer, Local Government Board, has been elected a member of the Athenæum Club under the rule which empowers the annual election by the committee of a certain number of persons "of distinguished eminence in science, literature, the arts, or for public service."

AT the quarterly Court of the governors of the London Hospital, held on March 5, Lord Knutsford made the important announcement that it is proposed to fill up two vacancies on the honorary visiting staff by the appointment of two whole-time adequately paid officers in charge of the beds. Under the new arrangement there would be a director, three clinical assistants, and laboratory and clerical assistants. These members of the staff will give their whole time to curing disease, to researches on the causation of disease, and to the education of the medical students, and they will be of precisely equal rank with the other members of the honorary staff. It will be remembered that this kind of arrangement was suggested in the report of the Haldane University Commission, and has been commended by Sir George Newman in his "Notes on Medical Education."

THE ravages of the larvæ of ox warble-flies are well known to farmers, butchers, hide-dealers, and tanners. The flesh of bullocks and the milk yield of cows suffer through the presence of these parasites, and the piercing of the hides greatly reduces the value of the latter. Furthermore, the annoyance caused by the flies during a hot July or August prevents cattle from thriving so well as they otherwise would do. So far little or no good results have been achieved from the application of various dips and smears which are intended to prevent oviposition by the flies. The only measure that can be advocated with any confidence is the systematic destruction of the larvæ in the backs of the cattle. This method has the obvious disadvantage that the parasite is destroyed only after it has wrought its injuries. Impressed by the damage caused by the fly, the War Office called a conference last July of Government Departments, men of science, traders, and others familiar with the pest to discuss measures for its extermination. A scientific sub-committee, presided over by Sir Stewart Stockman, will supervise experimental researches. A Government grant has been sanctioned, and the experiments are designed to furnish information on methods of preventing egg-laying of the fly, and on the effects of drugs in destroying the larvæ in the body of the host before they commence to penetrate the hide.

THE predominant character of the weather over the British Isles since the commencement of the year has been rainy and dull. The rainfall in January exceeded the average over the whole kingdom except in Scotland N., where there was a deficiency of about 2 in. At Bournemouth the rainfall was 252 per cent. of the normal, at Arundel 236 per cent., and in London, at Camden Square, 176 per cent. At Kew Observatory the excess of rain was 1·77 in., at Southampton 2·24 in., and at Falmouth 2·86 in. February rainfall was in excess of the average in the south and east of England, and deficient elsewhere. At Greenwich the excess of rain was 0·75 in., at Cambridge 1·85 in., at Southampton 2·32 in., and at Falmouth 2·80 in. In the first ten days of March rains were generally heavy; at Greenwich, in the three days ending March 5, the rainfall measured 1·49 in., which is 0·03 in. more than the sixty years' average for the whole month. The aggregate duration of bright sunshine since the commencement of the year has been deficient in all districts of the British Isles except in Ireland and in Scotland N.; in the south-east district of England the deficiency amounts to 0·6h. daily for the first nine weeks, or in all 38h. At Kew Observatory the sunshine in February was little more than one-half of the average, and at Cambridge it was less than one-half of the normal.

DR. S. F. HARMER, keeper of the Department of Zoology, Natural History Museum, has sent us a letter in which he points out that the remarks upon the directorship of the museum published in our issue of March 6 may be read as an undeserved reflection upon the value of the scientific services rendered to the museum by the assistant secretary, Mr. C. E. Fagan. For ourselves, we gladly accept Dr. Harmer's testimony of high appreciation of Mr. Fagan's services to science during the long period he has held office. We are, however, concerned solely with the principle, common in Government Departments, of appointing lay officials to direct scientific institutions. It is of the utmost importance at the present time not to concede this principle even when personal considerations may all be in favour of the appointment proposed. Dr. Harmer says that Mr. Fagan's work "has been essentially scientific, and that his services in rendering the national museum a scientific institution have been exceptionally great." These are, of course, claims to consideration, and no doubt the Trustees will give full attention to them. Our point is that, whatever candidates are forthcoming, scientific knowledge and experience should determine the appointment, and not purely administrative ability.

THE Department of Scientific and Industrial Research has just issued two revised Circulars, Research Association 1 and 3, the first giving an outline of the Government scheme for industrial research, the second the conditions as to the payment to research associations by the committee of council. As will be remembered, the Government has placed a fund of a million sterling at the disposal of the Research Department to enable it to encourage the industries to undertake research. This new fund is being expended on a co-operative basis in the form of liberal contributions by the Department towards the income raised by voluntary associations of manufacturers established for the purpose of research, and the joint fund for each industry is under the sole control of the councils or boards of the respective research associations so formed, subject to the conditions outlined in the second Circular referred to above. The results obtained from research will be available for the benefit of the contributing firms, but no firms outside the organisation will have any such rights. The associations are to be companies limited by guarantee of a nominal sum and working without profit, *i.e.* without division of profits among the members in the form of dividends. Moreover, the subscriptions of the contributing firms will not be subject to income or excess profits taxes, and the income of the association will similarly be free from income tax. The Government grant will be given for a period of years to be agreed upon, not exceeding five, except in special cases. The general practice, we believe, is to grant pound for pound raised by subscriptions within certain minimum and maximum limits, specified in each case, for the stipulated period, although, where the special circumstances of the industry may need it, this ratio may be increased. There is, moreover, provision for a possible increase of the grant where the association raises additional sums, and for reduction where it fails to reach the specified minimum.

THE *Times* of March 1, 3, and 4 contained long articles dealing with the necessity for the unification of the administration and the further development of the fishing industry. Two rather different points of view were taken by the writers; a special correspondent stated what may be regarded as the expressed opinions of the fishing industries—that is, the great trawling companies, the wholesale and retail traders, and the conservation industries; while Lord Dunraven stated the views of the Sub-Committee on Fisheries of the Empire Resources Development Committee. On one hand, the trade interests press for a great simplification in the existing machinery of central and local regulation and administration, consolidation of the law with regard to fishing, and the formation of a strong and adequate Imperial Ministry with the development of the industry as its single task. This would be directed to securing the means of speedy and economical transport and distribution of the fish landed, processes which are at present inadequate and wasteful. It would be closely and integrally linked up with—would actually include—the means of scientific, statistical, and industrial research carried out in the closest possible association with the industry itself and the machinery of administration. It would see that the present neglect of the inshore fisheries—shell-fish in particular—should cease, and it would greatly develop the fresh-water fisheries, particularly those for salmon and eels. On the other hand, Lord Dunraven emphasises the points of view of the State and the consumer rather than those of the trades voiced by the National Sea Fisheries Protection Association, namely, State control, co-operative enterprise, and development of the fisheries of the Dominions. To the trade, fish that is scarce and dear is easier to handle than, and at least as profitable as, fish that is cheap and plentiful. From the point of view of the consumer and of the State, cheap food, a large and prosperous fishing population, and, if possible, some revenue, ought to be the objects of reconstruction of the industries concerned.

NEXT Tuesday, March 18, Prof. A. Keith will deliver the first of a course of four lectures at the Royal Institution on British Ethnology: The People of Scotland. On Thursday, March 20, Prof. C. H. Lees will give the first of two lectures on Fire Cracks and the Forces Producing Them. The Friday discourse on March 21 will be delivered by Prof. W. W. Watts on Fossil Landscapes; and on March 28 by the Right Hon. Sir J. H. A. Macdonald on The Air Road.

THE death is announced of Major H. G. Gibson, who fell a victim to influenza probably contracted in the course of investigations on this disease. Major Gibson, with Major Bowman and Capt. Connor, published a paper in the *British Medical Journal* for December 18, 1918, in which they brought forward evidence that the influenza virus is of a "filterable" nature, *i.e.* is so minute that it will pass through a fine porcelain filter. Sputum from influenza cases was diluted and filtered through a Pasteur-Chamberland filter, and the filtrate was then inoculated subconjunctivally and intranasally into monkeys. The animals suffered from a condition resembling influenza, and the post-mortem condition found was in many respects comparable with that obtaining in human cases.

AN article by Dr. C. Davison in the *Observer* for March 9 deals with Prof. de Quervain's suggestion that a portion of the high explosives left in this country should be used for experimental explosions (NATURE, vol. cii., p. 371). After describing the principal results that might be expected from such experiments, the author points out that the firing of large amounts of explosive (Prof. de Quervain suggests fifty tons) is unnecessary. The sound from the explosion of 24½ tons of dynamite on the Jungfrau railway in 1908 was heard for 112 miles, and that of the explosion of 197 tons of gunpowder at Wiener Neustadt in 1912 for 186 miles. On the other hand, the reports of the minute-guns at Spithead in 1901 were heard to a distance of 139 miles, and in this case seven-pound charges were fired from at the most thirty men-of-war, or a total of less than two hundredweight, even supposing that the guns were fired simultaneously.

INFLUENZA has again made a steady increase in its virulence over the British Isles, and the Registrar-General's return for the week ending March 1 shows that in London (county) the deaths from the epidemic were 808, and in the ninety-six great towns, including London, they were 3889, both of which are the highest numbers since the closing week of November. The deaths from influenza in London had risen to 32 per cent. of the deaths from all causes, whilst in the preceding week they were only 25 per cent., but pneumonia had decreased from 14 per cent. to 12 per cent., and bronchitis from 16 per cent. to 13 per cent. In London there was some improvement in the general health, the total deaths from all causes having decreased from 2643 in the preceding week to 2501, and the annual death-rate per 1000 of the aggregate population had decreased from 34·2 to 32·4. In London 47 per cent. of the deaths from influenza during the week ending March 1 occurred at the ages from twenty to forty-five. In the twenty-one weeks since the commencement of the epidemic in October of last year influenza has caused 32 per cent. of the deaths from all causes, pneumonia 12 per cent., and bronchitis 9 per cent.

SIR ARTHUR EVANS in the *Times* of March 4 acts as spokesman of an influential committee formed under the auspices of the British Academy, and representing various learned societies interested in archæological research, which has presented a memorial to the Lords of the Treasury strongly urging the creation of an Imperial British Institute of Archæology in Cairo, with the aid of a State subsidy. Sir Arthur Evans justly points out that the position occupied by British archæologists in Egypt is markedly inferior as compared with the French and Germans, who already possess institutes of this kind, and with the Americans, who have large resources at their disposal. It is true that the Egyptian Exploration Fund and the British School of Archæology in Egypt, in spite of a very limited income, have done admirable work. But they are hampered by lack of funds to provide a home for their workers, instruction for their students, and an adequate library. Experts working under this system receive neither suitable remuneration nor any guarantee that they will be able to follow up their archæological career. Hence, while many of our university students are ready to assist in the work, they have little encouragement to make archæology their profession. It is also probable that the classes which contributed to these enterprises before the war will be unable to maintain their subscriptions.

A SPECIAL clinical and scientific meeting of the British Medical Association will be held in London on April 8–11. A popular lecture, on the surgery of the war, will be given by Major-Gen. Cuthbert Wallace. An exhibition of surgical instruments, hospital furniture, drugs, foods, sanitary appliances, etc., will be held at the Imperial College of Science and Technology, South Kensington, from Wednesday, April 9, to Friday, April 11, both days inclusive. On the evening of April 9 the Royal Society of Medicine will hold a reception at its house, 1 Wimpole Street, W. The guests will be received by Sir H. D. Rolleston, president of the society. The following discussions have been arranged; the names given are those of the introducers:—*Section of Medicine:* "War Neuroses," Lt.-Col. F. W. Mott; "Influenza" (in conjunction with the Section of Preventive Medicine and Pathology), Major-Gen. Sir W. Herringham, Capt. M. Greenwood, and Major Bowman; "Venereal Disease," Brevet-Col. L. W. Harrison; and "Prognosis in Cardio-vascular Affections," Dr. T. Lewis. *Section of Surgery:* "Gunshot Wounds of the Chest," Col. T. R. Elliott and Col. G. E. Gask; "Wound Shock," Prof. W. M. Bayliss and Dr. H. H. Dale; and "A Review of Reconstructive Surgery," Major R. C. Elmslie and Major W. R. Bristow. *Section of Preventive Medicine and Pathology:* "The Dysenteries: Bacillary and Amœbic," Col. L. S. Dudgeon and Prof. W. Yorke; "Influenza" (at a joint meeting with the Section of Medicine); and "Malaria," Lt.-Col. S. P. James.

THE introduction of the aniline dye industry has, as is well known, ruined the art of vegetable dyeing; and though we possess ancient fabrics dyed with vegetable colours, it is often not possible to trace the plants which yielded them. The aborigines of America were well versed in the art, and many Peruvian textiles are remarkable for their beautiful and permanent colours. Mr. W. E. Safford, in the Journal of the Washington Academy of Sciences (vol. viii., No. 19), gives an interesting account with figures of the xochipalli, or flower-paint of the Aztecs, which has hitherto been unidentified. The plant was described and figured three centuries ago, and has been supposed to be a species of Tagetes, but Mr. Safford has proved that the plant is really *Cosmos sulphureus*, and has verified his discovery by obtaining the rich orange-red from a decoction of the flowers, which is the colour of xochipalli described by Hernandez. Several of the other beautiful pigments derived from vegetables, used by the ancient Mexicans for the picture-writing of their celebrated codices, are referred to in this paper, and the names of the plants are given.

IN the February issue of *Man* Dr. W. Crooke discusses the question of hut-burning in India. In recent years several notices have been published of a custom prevailing from the Punjab southward to the Central Provinces of barren women burning pieces of thatch taken from the roofs of seven huts in the hope of obtaining offspring—a custom which in some places has led to fires and loss of life. The practice was explained by the late Mr. R. V. Russell on the theory that the woman burns the thatch in the hope that the spirit of one of the children of the family may be reincarnated in her body. It is true that dead children are often buried under the threshold in the belief that their spirits may be reborn in one of the women of the family, but, as Dr. Crooke observes, the intentional destruction of animal life is repugnant to many Hindus, and examples of reincarnation, as suggested in the present case, do not seem to be forthcoming. Dr. Crooke suggests another explanation. A barren woman is naturally regarded as being under taboo, sterility being universally attributed to the agency of malignant spirits. He quotes many instances to show that it is the custom that when a man or woman is accused of adultery or other offences against the laws of caste, the offender is purified by passing through seven straw booths which are successively set on fire. This leads to the conclusion that, in the case of barren women, the rite is a form of purgation which relieves her of the impurity to which sterility is attributed.

PROF. D'ARCY THOMPSON, in the January–February issue of the *Scottish Naturalist*, continues his most interesting notes on whales landed at the Scottish whaling stations, dealing in the present instalment with the bottle-nose, humpback, and finner whales. During the six years covering the period of these observations only twenty of the first-named species were landed at the Scottish stations, and this, not because of its rarity, but because it does not pay commercially to take these animals in small numbers, when they have to be towed ashore to be "tried out." Of the specimens landed none were fully adult. Of the humpback whales only thirty-one specimens were landed in Scotland during this period. Twenty-three were males, the largest of which measured 51 ft. in length. July was the chief month of capture. The finner, or common rorqual, is by far the commonest species taken at these stations, as is shown by the fact that during the period under review no fewer than 2409 were killed. The largest of the females, which slightly exceed the males, measured 81 ft. in length. Finally, in regard to all the species, Prof. Thompson gives some valuable figures as to the relation of the girth to the length, and much very acceptable information as to migration.

MR. C. RAUNKIAER (*Kgl. Danske Videnskab. Selskab. Biol. Meddel.*, i., 3, 1918) contributes a paper (in French) of considerable detail entitled "Statistical Investigations on Plant Formations," dealing more especially with those of northern Europe. A general description is given of the frequency and distribution of the species entering into the formations, of the relative proportions of the species, and of the common biologic characteristics by which the species of a formation adapt themselves to their habitat. The chief points to be noted for a complete ecological description of any given area are summarised, and a scheme is drawn up for a scientific description of plant formations.

THE Department of Agriculture of the Union of South Africa has issued a useful little pamphlet (Bulletin No. 5, 1918) entitled "Agricultural Grasses and their Culture," by Mr. H. A. Melle. In the early days, when the open veld afforded large areas of excellent pasture, little, if any, attention was given to the improvement of pastures. But the smaller farms consequent on a denser population of the country has necessitated experiments with exotic grasses for the improvement of pastures. The pamphlet gives an account of the grasses and some of the forage plants grown at the Botanical Experiment Station, Pretoria, and the writer discusses the merits and characteristics of the different species, so that farmers may judge for themselves which particular grass will be best suited for their purpose and locality.

VOL. VI. of "Fossil Vertebrates in the American Museum of Natural History" has just been received from the Department of Vertebrate Palæontology of that institution. It includes contributions 168 to 192, which appeared during the years 1915 to 1917 inclusive, from the studies of Osborn, Matthew, Brown, Granger, Gregory, Mook, Anthony, Watson, and von Huene. These articles are collected from the Museum Bulletin volumes of the corresponding years. The edition is limited to sixty copies, and is distributed to the principal research centres in various countries.

MR. R. H. PARSONS contributes a valuable paper on the coal consumption of steam-power plant to the *Electrical Review* of February 21. He points out that if the consumption of coal in a power station be plotted against the horse-power developed, all the points lie practically on a straight line. If W be the number of pounds of coal consumed and P the brake-horse-power developed, then, in symbols, $W=a+bP$, where a and b are constants which depend on the plant in the station. Similarly, if W' be the number of pounds of steam consumed, we have $W'=c+dP$, where c and d are constants. These laws are practically identical with the laws which Willans proved in connection with high-speed engines. We deduce, for instance, that the steam consumed per brake-horse-power developed will be W'/P, *i.e.* $d+c/P$. It is suggested that the mean lines should be found which give the graphs of W, P and W', P for the central station. If all the actual points shown on the curve lie very near this line, then the station is being worked economically. Whenever the points lie considerably above the mean line there is need for inquiry, and the fault will be found either in the boiler- or in the engine-room.

AN article on the economic size of concrete ships appears in *Engineering* for February 14. The author —Mr. E. O. Williams—plots a series of curves, and deduces from them the following information:—After 1500 tons dead-weight the displacement increases more rapidly than the increase in dead-weight. Minimum indicated horse-power per ton dead-weight occurs at 8000 tons dead-weight. Minimum cost of hull occurs at 4000 tons dead-weight. From these points it appears that the economic limit to concrete ships is between 5000 and 8000 tons dead-weight. At 1500 tons dead-weight the concrete ship is most favourably compared with a steel ship for displacement and indicated horse-power. The saving in steel at 1500 tons dead-weight is 74 per cent., and at 8000 tons dead-weight 38 per cent. Vessels above 8000 tons dead-weight are not economic in concrete; there is no saving in steel at 12,000 tons dead-weight; the displacement and the cost of the hull per ton dead-weight increase rapidly above 8000 tons. Concrete ships are most economical between dead-weights of 1500 and 4000 tons, and the best size is in the neighbourhood of 3500 tons dead-weight.

THE leading article in *Engineering* for February 21 deals with concrete roads, and considers the requisites of a good road with the view of discussing how far concrete fulfils the requirements. There is no question regarding the hardness of well-made concrete, but the length of life depends upon various other considerations. The road should offer low resistance to the movement of traffic over it. Recently some experiments were made in California with the view of ascertaining the pull necessary on different road surfaces to keep three tons of load in motion after it had been started. With water-bound macadam in good condition the pull was 64 lb. per ton; on a bituminous road, 49 lb.; on unsurfaced concrete, 28 lb. In other words, the load which would be kept in motion by four horses on unsurfaced concrete would require seven horses on an asphaltic surface and nine on a water-bound macadam. Concrete roads do not disintegrate under the traffic, and do not soften with rain or snow; there is, therefore, neither dust nor mud. Cleansing the surface can be carried out easily and rapidly without damaging the surface in any way whatever. The surface of a properly made concrete road does not work into waves, nor does it disintegrate or develop holes. The ideal road must not be slippery, and modern concrete roads possess surfaces which afford a good grip for hoof or tyre. Owing to the readiness with which water runs off the surface a much smaller camber may be employed, and there is thus less temptation for drivers to use the middle of the road only. Concrete roads are not affected by climatic conditions. The initial cost is higher, but the maintenance cost is much lower, than both water-bound and bituminous macadam.

The maintenance cost of the experimental stretch of concrete on the London to Chatham road, laid in 1915, has been *nil* during the four years.

A new series entitled "Manuals of the Science of Industry" is announced by *Messrs. Longmans and Co.* It will be edited by E. T. Elbourne, and the first volumes will be "Labour Administration," the Editor; "Law and Industry," A. S. Comyns Carr; and "Health and Industry," W. H. Judson. These are in active preparation. The *Open Court Co.* will publish shortly "Lectures on the Philosophy of Mathematics," J. B. Shaw. The *Wireless Press, Ltd.*, has in the press "The Year-Book of Wireless Telegraphy and Telephony, 1919"; "Continuous-wave Wireless Telegraphy," Dr. W. H. Eccles, part i.; "Telephony without Wires," P. R. Coursey; "Alternating-current Working," A. Shore; "Principes Elémentaires de Télégraphie sans Fil," R. D. Bangay; and "Manual de Instruccion Tecnica para operadores de Telegrafia sin Hilos," J. C. Hawkhead and H. M. Dowsett.

The latest catalogue (No. 177) of Messrs. W. Heffer and Sons, Ltd., Cambridge, mainly deals with books treating of subjects outside the range of a journal such as Nature, but one section gives particulars of some recent purchases of works relating to scientific subjects. Among them we notice vols. i. to xiii. of the *New Phytologist*; Moore's "Lepidoptera Indica," 10 vols.; Moore's "The Lepidoptera of Ceylon (Rhopalocera and Heterocera)"; "Catalogue of the Birds in the British Museum," "Catalogue of Birds' Eggs," "Hand-List of Birds," "General Index," in all 38 vols.; Sowerby's "English Botany, or Coloured Figures of British Plants, with their essential Characters, Synonyms, and Places of Growth," and the index, with the Supplements, and MS. index; Parkinson's "Theatrum Botanicum: The Theatre of Plants, or an Herbal of a Large Extent," first edition; and Roscoe's "Monandrian Plants of the Order Scitamineæ."

The special catalogues of Messrs. J. Wheldon and Co., 38 Great Queen Street, Kingsway, W.C.2, are always worthy of note, being very carefully classified and containing books not easily procurable. The one just issued (new series, No. 86) is no exception to the rule, and should be seen by all entomological readers of Nature. It contains particulars of more than 1100 volumes dealing with entomology in its various branches, conveniently arranged under the headings Lepidoptera, Coleoptera, Arachnida, Myriapoda, Diptera, Hemiptera, Hymenoptera, Neuroptera, Orthoptera, General Entomology, and Economic Entomology. In addition, attention is directed to sets and long runs of many scientific serials. The catalogue is sent post free on receipt of 2*d.*

OUR ASTRONOMICAL COLUMN.

The Reform of the Calendar.—It will be remembered that this subject was much to the fore before the war, and it is now again attracting attention. The *Comptes rendus* of the Paris Academy of Sciences for January 6 and 20 contain papers upon the subject by M. G. Bigourdan and M. H. Deslandres respectively. Both agree that each quarter should consist of two months of thirty days each, followed by one of thirty-one. This makes each quarter just thirteen weeks. There would be a supplementary day at the middle of the year; in leap-year an additional one at the end. M. Deslandres (but not M. Bigourdan) is in favour of putting these days outside the weekly reckoning, so that every year would have the same days of the week on the same days of the month. There is no question that the existing calendar, with its irregular months, short February, and leap-day at the end of the second month, is very ill-contrived; it is only the difficulty of agreement as to the best alternative that has permitted it to survive so long.

Dark Markings on the Sky.—Prof. Barnard has often described these dark patches of definite outline, which strongly suggest, by their appearance and by the abrupt alteration in star-density, that they are due to clouds of obstructing matter. He gives a catalogue of 182 of these objects in the *Astrophysical Journal* for January. They are mainly, but not wholly, in the Galaxy. He suggests that in many regions of the sky there is enough background luminosity, due either to unseen stars or diffused nebulous matter, to throw them into relief; one such is in R.A. 4h. 22m. 50s., N. decl. $46^\circ 21'$; it is a dark, elliptical space $15' \times 10'$. It is curious that Prof. Barnard's paper is in juxtaposition with one by Dr. Harlow Shapley on the distances of the globular clusters; taken in conjunction with recent evidence of the wide distribution of calcium in cosmic clouds, it tends to weaken our confidence in the perfect transparency of space which is one of the postulates of Dr. Shapley's deductions. Prof. Barnard gives photographic reproductions of nine of the dark regions in the galactic clouds. In some cases they are fairly round and regular, in others they present complicated and contorted forms.

The Astrographic Catalogue.—Vol. ii. of the Hyderabad section of this Catalogue has just been published, containing the measures of the stars on the plates the centres of which lie in decl. -18°. There are 61,378 stars in the volume, which is at the rate of 3½ millions to the whole sky. Their x, y co-ordinates are given, and the measured diameters. A separate formula is calculated for each plate, of the form $A - B\sqrt{d}$, to reduce to the ordinary magnitude scale. The limiting magnitude for most of the plates appears to be about 13. Standard co-ordinates are also given for all the stars that occur in the Algiers or Washington Astr. Gesellschaft catalogues, which are for the same epoch (1900) as the present catalogue. There are also auxiliary tables for forming the R.A. and declination of any star, if required.

This volume has a pathetic interest in that the director, Mr. R. J. Pocock, has died since it was sent to press. In spite of war difficulties, he accomplished a great deal of work during his few years at Hyderabad. Much of it is still unpublished.

A SUGGESTED GOVERNMENT CHEMICAL SERVICE.

An important memorandum has been drawn up by the council of the Institute of Chemistry, which desires to direct the attention of the Government to the increasing and vital importance of chemical science in affairs of the State. The memorandum is published in the Proceedings of the institute, part iv., recently issued.

The council is of opinion that the time is opportune for taking steps to secure for the profession of chemistry a position corresponding with that occupied by other learned professions. It considers that much would be accomplished towards the attainment of that aim if, in the first place, adequate and uniform conditions of appointment were accorded to chemists directly engaged in the service of the State. These include chemists occupied in research, in analysis, and in technological work, as well as those employed in